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AUTHOR Reinard, John C.; Reynolds, Rodney A.
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ABSTRACT

This research sought to determine the persuasive impact of Toulmin's categories of message development. Specific hypotheses were formulated after a review of the literature related to "backing for the warrant" (evidence), "rebuttal" (two-sided messages), and "qualifier" (message-receiver discrepancy). Results from a study of 120 college students indicated that the most persuasive form of message was that which employed backing and rebuttal (evidence and a two-sided message). Additionally, it was found that two-sided messages produced significant attitude change only when accompanied by evidence. (Author/AA)

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COMMUNICATION RESEARCH AND SERVICES

AN EXPERIMENTAL STUDY OF THE EFFECTS OF TOULMIN'S PATTERN FOR ARGUMENT DEVELOPMENT ON ATTITUDE CHANGE

John C. Reinard
Rodney A. Reynolds

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Communication Faculty
YSD/412 Stauffer Communication Building
Arizona State University
Tempe, Az. 85281

CS 501 593

ABSTRACT

This research sought to determine the persuasive impact of Toulmin's categories of message development. Based upon a review of literature on "backing for the warrant(evidence)," "rebuttal (two-sided messages)," and "qualifier (message-receiver discrepancy)," hypotheses were formulated.

The most persuasive form of message development was that which employed backing and rebuttal (evidence and a two-sided message). Additionally, it was found that two-sided messages produced significant attitude change only when accompanied by evidence.

AN EXPERIMENTAL STUDY OF THE EFFECTS OF
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Despite the growth in the amount of knowledge possessed about the process of communication, the impact of forms of argument in messages has been given fairly limited behavioral attention. Perhaps a major influence on the failure of behavioral researchers to concern themselves with argumentative message development has been the near usurpation of the subject by philosophers who have seemed prone to reduce argument in communication to a priori mathematical forms. Unfortunately for communication researchers, as Cronkhite (1969) noted: "The study of formal logical systems is not likely to reveal to the speaker the mechanics of human inference, whereas empirical research may eventually do so [p. 191]." The discovery of underlying patterns of persuasive development of argumentative messages may assist in understanding some dynamics of messages in persuasive communication --provided formal logical systems are not arbitrarily superimposed on the behavior under investigation.

A potentially useful system for the study of message development has been the model conceptualized initially by Stephen Toulmin (1958). Although a logician, Toulmin rejected classical logical forms (and, indeed, the word, 'logic') and any attempts to reduce human inference to a priori systems designed to ascertain "correct" or "incorrect" rules of thought. Instead, Toulmin suggested a system for outlining ideas in communication and isolating key factors of their development. As such, Toulmin's approach appears to be much more communication-oriented than other argumentative conceptions since it seems to be receiver-centered, situational, and field dependent (see Lewis, 1972,

esp. 52). With his flexible approach to the study of argumentative messages, preliminary analysis of patterns of message development might be fully undertaken. This paper reports a study to help assess the persuasive effects of messages using the category system established by Toulmin for argument development. In keeping with Toulmin's perspective, the term 'logic' will not be referenced in order to emphasize rejection of philosophical a priori rules of "correct thought." Instead, the term 'argument' will be used to represent the key independent variable conceptualized in this study.

Foci of Problem and Rationale

In order to examine the complexities of Toulmin's message development notion, a brief literature assessment was made in two major areas: (1) explanation of the nature of the Toulmin category system, and (2) review of research relevant to hypothesizing persuasive impact of the Toulmin model approach to message development.

The Toulmin model marked a distinct change in consideration of arguments in persuasive communication. Rejecting the syllogism as largely irrelevant to actual human cognition, Toulmin urged an end to the over-formalization of argument and "marketplace" reasoning (see Anderson & Mortensen, 1967). The utility of the felxible model has been expanded by some to prescribe means by which effectiveness in persuasion might be better achieved (see Scheidel, 1967; Terris, 1968). At any rate, one may use Toulmin's category system to determine the means by which greatest attitude change may be induced as well as an a posteriori analytic framework, without compromising the fundamental conceptualizations of the model.

In order to understand how an argument may be developed one must note that two triads compose and define the conception of argument. The first triad is composed of data ("the facts we appeal to as a

foundation for the claim[Toulmin, 1958, p. 97]"), claim ("the conclusion whose merits we are seeking to establish[Toulmin, 1958, p. 97]"), and warrant ("a general principle which says that the conclusion may be drawn from the[data]. . .[Windes & Hastings, 1965, p. 158]"). Taken together, data, claim, and warrant are the three indispensible units of proof (Ehninger & Brockriede, 1963, p. 99). Without any of these units ones does not have an argument; perhaps an assertion or some other statement, but not an argument.

An argument is at its stark minimum at the first triad level of message development. Three additional parts may be added to the first three indispensible units of proof: backing for the warrant ("additional argument, supporting evidence or evidence aliunde, needed to establish the warrant[Freeley, 1972, p. 143]"), rebuttal ("the exceptional conditions which might be capable of defeating or rebutting the warranted conclusion[Toulmin, 1958, p. 101]") and qualifier ("the strength[of the claim]conferred by the warrant . . .[under] conditions of rebuttal[Toulmin, 1958, p. 101]"). This study focuses upon the addition of the elements in the second triad as key methods of message development.

As they fit into the Toulmin layout, the advocate may add or delete various combinations of them to achieve persuasive effect. One might expect, however, that the more developed an argumentative message is, the more persuasive it should be since it would seem to have provided a more complete case argumentatively. Nevertheless, such a statement may invite some qualification.

McCroskey (1972, pp. 83-99) has developed a diagramatic plan which modifies Toulmin's approach by locating the sources of rebutal (the data-claim relationship, the data-warrant relationship, the claim-warrant relationship, or the relationship of data-claim, data-warrant,

or warrant-claim to the rest of the argument). Although McCroskey's design provides a conceptual advantage over Toulmin's model when the notion of rebuttal locus is included, McCroskey's diagrams have not been developed enough at present to allow a similarly clear view of the role of "backing for the warrant" and "qualifier to the claim." As a result, this research benefits from McCroskey's contributions but relies primarily on Toulmin's original system so that the key aspects of message developemtn (backing and qualifier) also may be investigated for their impact on receiver attitudes.

Past literature on the three developmental elements of messages may be considered for each of the message factors isolated for study.

Backing for the warrant usually is in the form of evidence in support for belief in the warrant. Evidence has been conceptually defined many ways, but one of the most useful definitions was McCroskey's (1967) view that evidence includes: "Factual statements originating from a source other than the speaker, objects not created by the speaker, and the opinions of persons other than the speaker which are offered in support of the speaker's claims[p. 191]." Although such a definition excludes "self-referenced" observation (see Ostermeier, 1967), it is still a valuable definition since it refers to typical aspects of evidence used by advocates.

In his reveiw of literature McCroskey (1969) pointed out that some previous studies illustrated the importance of citing sources in a persuasive message, while others concluded that supporting documentation appeared to make little difference. McCroskey argued that evidence effectiveness is actually an interaction of the ethos of the speaker and the source of the evidence. Thus, moderate or lowly credible sources may enhance their credibility by citing expert sources. Highly credible sources, however, have little to

gain by citing evidence from sources as credible or perhaps even less credible than themselves. For moderate, 'neutral,' or lowly credible sources, however, evidence should be expected to produce significant immediate attitude change provided the topic and evidence were not familiar to the receivers and the message nor poorly delivered. Thus, in a persuasive message before a randomly assigned group of college-age receivers, one would expect evidence to have a significant impact on attitude change. Given these provisos, one would be led to hypothesize significantly more attitude change in the direction of the claim of the persuasive communication when evidence is presented, than when no evidence (backing for warrant) is presented.

The rebuttal step of argument development has been examined by researchers investigating the effects of one- versus two-sided messages. Since this research has tended to address itself to inoculation theory some of the findings seem only indirectly related to the study of the immediate effects of messages.

Hovland, Lumsdaine, and Sheffield (1949) investigated the effectiveness of presenting only supportive evidence, versus including opposing arguments. They found that reluctant audiences responded more favorably when both sides of the issue were presented, while a one-sided message was more effective when the audience tended to agree with the claim of the persuasive communication from the outset. Additionally, better educated subjects were most persuaded by the two-sided message. Bettinghaus and Basehart (1969), however, in their replication of the Hovland , et al. study found no significant differences with regard to education of subjects and their susceptibility to one- or two- sided messages. In a relevant study on the subject,

Thistlethwaite and Kamenetsky (1955) found that a two-sided persuasive message was more effective than a one-sided persuasive message when the counter-arguments were familiar to the audience. Most research, however, has been directed toward the impact of two-sidedness in producing inoculation to persuasion and, is thus not directly relevant to the research suggested in the paper presented here (see McGuire, 1972). After implicitly assuming that subject familiarity with topic and arguments would be held constant in most research, Cronkhite (1969) summarized work on the subject as follows:

> The message in which opposing arguments are at least mentioned and possibly refuted, seems to be most effective in all cases except one: It may be less effective initially if the listener has less than an eighth grade education and already favors the position advocated in the communication. (p. 199)

Thus, it would be expected that message development by use of the rebuttal step would almost always yield greater attitude change than other conditions. The technique's inclusion in persuasive communication before a college audience which initially rates the topic "neutrally" or unfavorably, then, would likely be more effective than excluding use of the rebuttal.

The impact of qualifier on attitude change is not completely understood. It is known, for instance that the amount of attitude change produced may be in direct ratio to the amount of change advocated (Hovland & Pritzker, 1957; Aronson, Turner & Carlsmith, 1963). However, in his research review, Whittaker (1967) found a group of conflicting studies on the mesaage discrepancy issue. He argued for the existence of a curvilinear relationship between the amount of change advocated and the actual production of change. Beisecker and Parson (1972) write in their overview of such research:

> The role of ego-involvement has also received attention. Freedman, for instance, found that under conditions of low

> involvement the amount of attitude change produced increased with the size of the discrepancy. Under conditions of high ego-involvement, the amount of change produced first increased and then diminished as the discrepancy size increased . . . . Whittaker interprets the results of this study and others from the social judgment-involvement approach. This orientation predicts a curvilinear relationship between the amount of change requested and produced. The parameters of the curve are determined by an individual's latitudes of acceptance and rejection, and these in turn are functions of his ego-involvement. (p. 372)

If the degree of change requested fall into the receiver's latitude of acceptance assimilation will occur; if the degree of change requested falls into the receiver's latitude of rejection constrast will occur and no significant attitude change will be observed.

One might expect that a message developed with a qualifier (which would tend to limit the amount of attitude change advocated) would be the safest move for the prudent advocate and, hence, could be expected to produce more attitude change over the long run. This prediction, of course, is reflective of the inability of experimenters to design a single, constant message which would be known to fall within the latitudes of acceptance of a group of different receivers.

In summary, notwithstanding that background research has been completed on isolated aspects of the Toulmin system for message development, no investigation has been undertaken to apply the entire system to the effectiveness of message development. This study seeks to fill this gap in research on argument and message development in persuasive communication.

Statement of Hypotheses

With the literature of the subject serving as background, the following hypotheses on the impact of backing, rebuttal, and qualifier, were advanced:

H_1: When presented with a persuasive message including backing for the warrant, subjects will demonstrate significantly greater change in attitude in the direction of the claim of the communiation than subjects presented with persuasive communication without backing for the warrant.

H_2: When presented with persuasive communication including rebuttal, subjects will demonstrate significantly greater change in attitude in the direction of the claim of the communication than subjects presented with persuasive communication without rebuttal.

H_3: When presented with persuasive communication including qualifier subjects will demonstrate significantly greater change in attitude in the direction of the claim than subjects presented with persuasive communication without qualifier.

Obviously, these hypotheses are based on isolated research predictions from past research findings. When each of these elements works in concert with other elements one might predict a major interaction effect. A fourth interaction hypothesis was suggested:

H_4: When presented with a persuasive communication including backing for the warrant, rebuttal, and qualifier, subjects will demonstrate significantly greater change in attitude in the direction of the claim than subjects presented with a persuasive communication with any other combination of backing for warrant, rebuttal, or qualifier.

In essence, this hyp thesis predicts that the greater the degree of message development, the greater should be the change in attitude.

METHOD

Sample

One hundred and twenty subjects obtained from the Basic Speech Communication course at a Western University were sampled for this study. Such a sample allowed fifteen responses to be assigned to each experimental condidti on. It should be noticed that the sample size indicated excludes a sample of fifteen subjects who simply evaluated the undeveloped argument. Additionally, the sample of 120 subjects was taken from a larger sample of 147. Random selection of subjects was accomplished by use of the FORTRAN IV program RANDNO

employing non replacement randomization.

Materials and Measures

Experimental booklets were constructed containing the experimental treatment and the attitude measure. Subjects were asked to read one of eight stimulus messages favoring a federally guaranteed annual income. This topic was used based upon previous research completed which demonstrated that this topic was rated "neutrally" familiar to the student population.[1]

In order to verify the operationalizations of the Toulmin categorizations of message development, an expert jury was consulted. Jurors were seven professors of argumentation and graduate students in Speech Communication who were known to be conversant with the Toulmin layout of argument. Jurors were asked to diagram the experimental arguments and agreement on all the categories was found to be above the .80 cutoff. Sources for the persuasive communication were not mentioned, thus providing some assurance that the source of communication would be perceived, in all liklihood, as a neutrally or moderately credible advocate (see Tompkins & Samovar, 1964). Evidence sources for backing for the warrant were selected based upon a previous pilot study which determined them to be rated of moderate credibility.[2] Recency of evidence was controlled by withholding all reference to dates. Language emotiveness of each portion of the message development was controlled by use of the Human Interest Quotient technique of analysis (Lynch, 1968). The range of HQ' is zero to seventy-three. If two message elements have HQ' 's approximately equal to one another, then their language emotiveness is said to be approximately the same. Given this range, the messages were deemed to have

approximately equal degrees of language emotiveness since their HQ' scores were not separated by more than a standard 7.3 difference.

Four seven-interval evaluatively-loaded semantic differential type scales were factor analyzed using a principal components solution and were found to load on one evaluative factor: good/bad (.92); wise/foolish (.94); positive/negative (.92); fair/unfair (.86). The order of the adjectives was varied and the poles reflected from condition to condition. Extreme favorable scores were rated a score of seven with extreme negative scores rated as a score of one.

Procedures and Design

The study featured a factorial design employing a Post-Test Only Control Group (Campbell and Stanley, 1963) design within each cell. Three variables were manipulated with two levels each. Backing for the warrant featured two levels: with backing and without backing. Rebuttal featured two levels: with rebuttal and without rebuttal. Qualifier featured two levels: with qualifier and without qualifier. Thus, three variables comprised the matrix of a two-by-two-by-two factorial design.

Subjects were tested in their classrooms by the experimenters. The booklets were numbered and placed in random order by reference to a table of random numbers and distributed to subjects in that order. Thus, complete randomization was possible by use of two steps: (1) random assignment of subjects to conditions and (2) random selection of subjects from a larger initial sample.

Statistical Manipulation

The post-test attitude scores for the attitude measures were entered into a two-by-two-by-two factorial analysis of variance

package and tested for significance. Following a significant effect, Sheffe's critical K was computed (Kirk, 1968) to determine differences between and among cells in the design. Sheffe's was employed since it is the most powerful multiple comparison method when compound comparisons are made.

Comparison with control group scores was made using Dunnett's test.

Alpha was set at .05 for all statistical tests.

RESULTS

Results will be considered for control group comparisons and for hypotheses.

Control Group Comparisons were accomplished by computing a one-way analysis of variance for all groups including the control group and testing for significance using the Dunnett method. With a control group mean of 18.0 and a mean square error of 3.27, the control group deviated from only four experimental groups: with backing-with rebuttal-no qualifier; with backing-no rebuttal-with qualifier; without backing-with rebuttal-no qualifier; no backing-no rebuttal-no qualifier (critical d: 1.89).

Hypotheses were tested by the analysis of variance reported on Table 1. One main effect was found significant on backing for the warrant with two interaction effects: one on backing by rebuttal and one on backing, rebuttal, and qualifier.

Hypothesis one was supported by the presence of the main effect on backing for the warrant. Inspection of means indicates

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insert Table 1 approximately here

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that messages with evidence generally were more persuasive than messages without evidence.

Hypothesis two and hypothesis three were not supported by the results.

Similarly, hypothesis four was not supported. Reference to Sheffe's test revealed that the message with complete development was not superior to all other combinations of message development elements.

A cell was found, which contained elements which produced more attitude change than any other combination of elements: with backing-with rebuttal-without qualifier (S: 4.277; Critical K: 3.83).

It was additionally found that an interaction effect between backing and rebuttal could be explained by the fact that the use of rebuttal was persuasive only when backing for the warrant was also present. Without backing for the warrant, the use of rebuttal seemed to reduce the persuasive impact of the message (see Table 2 and Table 3).

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insert Tables 2 and 3 approximately here

DISCUSSION

Although the results supported only one a priori hypothesis, these results offer some valuable answers to the question, what sort of argumentative development in messages facilitates attitude change?

The support for the traditional prescription that the use of evidence is valuable as a persuasive tool seems quite predictable. As such, support for the first hypothesis lend further credence to past research on the effectiveness of evidence in producing attitude change.

The failure to support the second hypothesis is disturbing given past research on the subject. One may question whether the message's use of a two-sided statement without additional refutation

was a proper use of rebuttal. It may be that a two sided message which attempts to take issue with the alternative viewpoint suggested (either explicitly or implicitly) may be an illegitimate use of the rebuttal. Additional research now underway should test this alternative explanation.

The failure to support the third hypothesis should not be disappointing when one considers that little change was called for in the message in the first place. Belief in adoption of a guaranteed income does not require a major change in behavior or beliefs.

The finding that the use of backing, rebuttal, and no qualifier produced the greatest amount of attitude change is intriguing. One wonders, however, is the failure to the qualifier to have any impact is merely reflective of the specific operationalization employed. A study now underway by the authors investigates that possibility. Nevertheless, it seems that a pattern exists in the development of arguments in messages. The most effective ones seem to employ both evidence and two-sided messages even though the claim of their argument may be unqualified.

The finding that a two-sided message was effective in producing attitude change only when accompanied by a message using backing for the warrant, poses a major limitation of the past research which investigated two-sided messages. It may be that some of the research which found no significant message sidedness effect were those which excluded evidence from the operational messages. If so, the past research should be seriously reconsidered. The point of the matter appears to be that message development cannot be considered independently from other factors of message development which add elements to the message development pool. This message sidedness-evidence interaction poses some though provoking questions about

past research undertakings on message variables.

Nevertheless, some limitations on the results of this study must be mentioned briefly. First, there is a question of whether any set of different message attributes--no matter how carefully constructed--can be comparable in ways no specified by the experimenter. Although controls were placed on sources, evidence, language emotiveness, and the like, one cannot be sure that the message units were comparable in all other important ways. Perhaps message length--as much as any factor of argument development--contributed to the effectiveness of certain combinations and the failures of other combinations in producing attitude change effects. Second, there is a very strong claim which can be made for the argument that argument development is unimportant in all but adversary settings. As such, the research reported here may be limited by attempting to test in one setting what is most properly commonly observed in quite a different setting. Third, the study made no attempt to determine any credibility effects attributed to the advocate whose identity was unknown in the experiment. It is not possible to entirely eliminate the alternative explanation that credibility effects seriously confounded the study--the form of such confounding, however, does not seem readily apparent.

FOOTNOTES

[1]In a pilot survey of thirty-one subjects selected from the larger population, five topics were assessed on a seven-point "familiar-unfamiliar" scale. The guaranteed income topic was chosen since it proved to be a topic of 'neutral' familiarity.

[2]Fifty magazine titles were chosen from the *Reader's Guide to Periodical Literature* and evaluated by a group of thirty-four subjects on McCroskey's credibility scales (Scales for the measurement of ethos, *Speech Monographs* (1966), 33, 65-72) which had been factor analyzed for this population and found to yield two evaluative factors, authoritativeness and character. Thus magazines which scored within the 'neutral' scale interval were selected for use in the study.

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TABLE 1

ANALYSIS OF VARIANCE OF ATTITUDE SCORES

SOURCE	D.F.	MEAN SQAURE	F
Backing (evidence)	1	421.875	11.618 *
Rebuttal (two-sided)	1	3.008	<1
Qualifier (discrepancy)	1	37.408	1.030
Backing X Rebuttal	1	323.408	8.906 *
Backing X Qualifier	1	52.008	1.432
Rebuttal X Qualifier	1	12.675	<1
Backing X Rebuttal X Qualifier	1	210.675	5.802 *
ERROR	112	36.313	

* Significant at .05 level

TABLE 2

TABLE OF MEANS

	With Backing		Without Backing	
	With Rebuttal	Without Rebuttal	With Rebuttal	Without Rebuttal
With Qualifier	19.87 111	20.2 121	16.8 211	18.4 221
Without Qualifier	25.6 112	19.33 122	14.6 212	20.2 223

Possible Range 7 to 28

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